

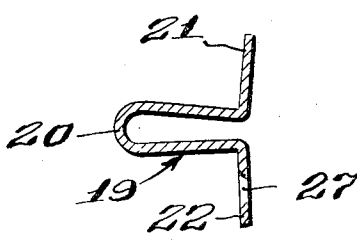
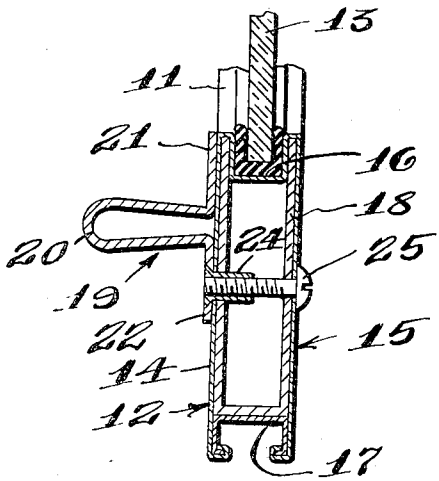
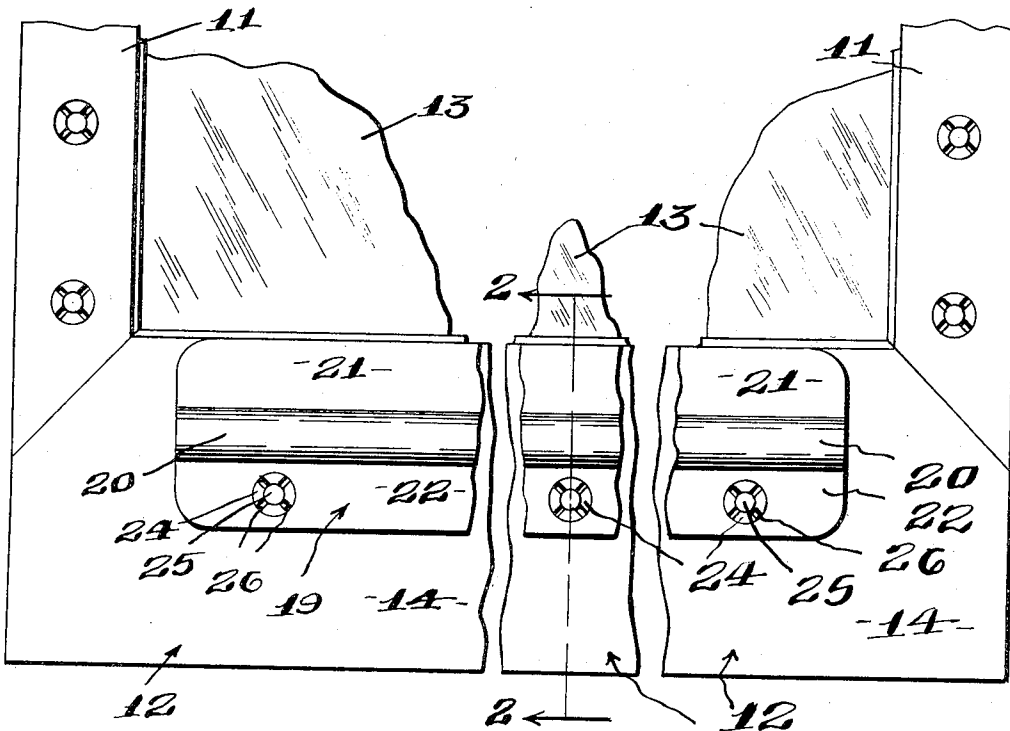
Aug. 8, 1933.

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**1,921,386**

## WINDOW SASH CONSTRUCTION

Filed Oct. 19, 1931



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## UNITED STATES PATENT OFFICE

1,921,386

## WINDOW SASH CONSTRUCTION

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Application October 19, 1931. Serial No. 569,675

9 Claims. (Cl. 189—76)

This invention relates to hollow, thin, sheet metal sashes, and has for its object a particularly simple and efficient means for reinforcing the sash, and particularly a member thereof to which force is applied in raising and lowering the window, and which, to a large extent, receives any force applied to the window, as when washing the window, and more particularly, a reinforcing means for a wide window sash which is susceptible to distortion and hence, breaking of the glass, during the raising and lowering, or handling, of the sash, and when any force is applied thereto at a right angle to the plane of the sash, as when the window is being washed.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is made to the accompanying drawing, in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation, partly broken away, of a window sash embodying this reinforcing strip, the strip being shown as applied to the bottom rail.

Figure 2 is a sectional view on line 2—2, Figure 1.

Figure 3 is a cross sectional view through the detached reinforcing strip showing the form of the same before it is clamped to the sash and tensioned.

Sheet metal sashes are formed up of thin sheet metal to have opposing front and rear walls, and a re-entrant glass receiving groove and hence, owing to the thin sheet metal, these sashes, particularly wide sashes, are subject to distortion when abnormal forces are applied thereto, and the distortion or bending of the sash member causes breaking of the large glass pane. Also, reinforcing strips that are welded, or brazed, or secured to the sash member by a process requiring heat, tend to distort them and the reinforcing force is not evenly distributed. Furthermore, reinforcing strips that are clamped at intervals throughout their length and breadth apply the reinforcing strain unevenly and tend to warp or distort the sash member.

This invention comprises a reinforcing strip for light, hollow, sheet metal sashes, by which the reinforcing force is evenly distributed throughout the length of the sash member particularly along the margin of the reinforcing member toward the glass pane.

The sash includes the usual top rail, not shown, stiles 11, bottom rail 12, and glass pane 13. The

stiles and rails are secured together in any well known manner, and usually both the rails and the stiles are formed up of thin sheet metal to have front and rear walls 14, 15, and a re-entrant groove 16 for receiving the margin of the glass pane 13.

In Figure 2, the bottom rail is shown as also provided with a groove 17 along its lower edge for receiving a buffer for coacting with the window sill. The front and rear walls 14 and 15, being thin, are obviously liable to bending and distortion when force is applied, as a lifting force, or a force at a right angle to the plane of the sash, even when reinforced by inserts, as a U shaped insert 18, where the sides of the U formation lap the side walls of the re-entrant groove.

19 designates a reinforcing strip extending lengthwise of the bottom rail the greater part of the length thereof and mounted on one of the walls, as the wall 14, this strip being inherently tensioned to press its lengthwise marginal portions against the rail when the strip is clamped to the rail, and being clamped or anchored to the rail along one margin only. Owing to this tension of the strip, the reinforcing force is evenly applied throughout the length of the rail and near the margin of the glass pane.

As here illustrated, the strip 19 is formed with a lengthwise corrugation 20 extending substantially the full length thereof, and with base flanges 21 and 22 on opposite sides of the corrugation, the base flanges being normally arranged at an inclined angle, as shown in Figure 3, so that they will be tensioned when the strip is clamped against the sash, the tensioning being due to the flattening action of the base flanges. The tensioning is also facilitated by the corrugation 20. The strip is clamped to the sill along one of the base flanges 21, 22 only, the other being pressed by the inherent resiliency of the strip snugly and forcibly against the rail. Preferably, the lower base flange 22, that is, the flange below the corrugation 20, and remote from the glass pane, is clamped at intervals to the rail 12, the upper flange 21 being pressed snugly against the rail along the upper edge of the rail.

The strip is clamped to the bottom rail by any suitable means as clamping members which extend entirely through the hollow rail 12 in contradistinction to extending through one wall. Each of these clamping members preferably includes a sleeve screw 24 extending through the flange 22 and the wall 14 of the sash, and a stud screw 25 extending through the other wall 15 and threading into the sleeve screw. The sleeve screw

is split, as at 26, in order to have a contacting action on the screw 25 as the screws are tightened and the conical head of the sleeve screw is drawn into the conical perforation 27 in the flange 21.

- 5 Clamping means are preferable to welding, brazing or other operations requiring heat which would permanently distort and deface the thin sheet metal walls of the rail. The corrugation 20 also serves as a lift handle used when raising and lowering the sash.

- 10 The corrugation 20 is here shown as in the form of an elongated loop wider toward its outer end or crown than at its base or pear shaped, thus affording finger and thumb holds on its lower and upper sides so that the hand or hands will not slip when raising or lowering the sash. Owing to the length of the corrugation 20 it can be used to raise or lower the sash at any point or points and the face will be distributed and not localized.
- 15 Usually in wide sashes left handles are located near the ends of the bottom rail or one in the middle. At best, this arrangement is awkward and the lifting force localized taking up strains in the glass pane tending to break it in wide sashes.

- 25 Owing to this construction of a reinforcing strip, the thin sheet metal sashes, or the rails thereof, are firmly stiffened against distortion and owing, to the tensioning of the strip, the reinforcing force is evenly applied.

What I claim is:

1. In a window sash having a hollow sheet metal frame member, the combination of a reinforcing strip extending lengthwise of said member on the outside thereof the greater part of the length of said member, said strip being tensioned to press its opposite lengthwise marginal portions against the sash member, and means for clamping the strip to said member and thereby tensioning the strip.

2. In a window sash having a hollow sheet metal frame member, the combination of a reinforcing strip extending lengthwise of said member on the outside thereof the greater part of the length of said member, said strip being tensioned to press its opposite lengthwise marginal portions against the sash member, and means for clamping the strip to said member, the clamping means coacting with only one of the lengthwise marginal portions, the other marginal portion being unsecured to the sash member.

3. In a window sash having a hollow sheet metal rail, the combination of a reinforcing strip extending lengthwise of said member on the outside thereof, the greater part of the length of said rail, said strip being formed with a lengthwise corrugation substantially the full length thereof, and having marginal base flanges on opposite sides of the corrugation pressing against the sash and normally arranged at an inclined angle so that upon clamping of the strip against the rail, said flanges compress toward, and are tensioned to press against, the rail, and means for clamping the strip to the rail.

4. In a window sash having a hollow sheet metal rail, the combination of a reinforcing strip

extending lengthwise of said member on the outside thereof, the greater part of the length of said rail, said strip being formed with a lengthwise corrugation substantially the full length thereof, and having marginal base flanges on opposite sides of the corrugation pressing against the sash and normally arranged at an inclined angle so that upon clamping of the strip against the rail, said flanges compress toward, and are tensioned to press against, the rail, and means for clamping the strip to the rail, said means being located entirely on one side of the corrugation.

5. In a window sash having a hollow, thin, sheet metal rail having a re-entrant glass receiving chamber, the combination of a reinforcing strip extending lengthwise of the rail on the outside thereof the greater part of the length of the rail and formed with a central lengthwise corrugation, and base flanges on opposite sides of the corrugation for pressing against the rail, one of the flanges lapping the inner margin of the sash along said channel, and means for securing the strip to the rail.

6. In a window sash having a hollow, thin, sheet metal rail having a re-entrant glass receiving chamber, the combination of a reinforcing strip extending lengthwise of the rail on the outside thereof the greater part of the length of the rail and formed with a central lengthwise corrugation, and base flanges on opposite sides of the corrugation for pressing against the rail, one of the flanges lapping the inner margin of the sash along said channel, and means for securing the strip to the rail, said means coacting with the other base flange.

7. In a window sash having a hollow, thin, sheet metal rail, the combination of a reinforcing strip extending lengthwise of the rail on the outside thereof the greater part of the length of the rail and formed with a central external lengthwise corrugation, and base flanges on opposite sides of the corrugation for pressing against the rail, and means for securing the strip to the rail along one only of the base flanges.

8. In a window sash having a hollow sheet metal frame member, the combination of a reinforcing strip extending lengthwise of said member on the outside thereof, the greater part of the length of said member, said strip being tensioned to press its opposite lengthwise marginal portions against the sash of the sash member, and means for clamping the strip to said member, the portion of the strip between said marginal portions being spaced from the rail.

9. In a window sash having a hollow sheet metal frame member, the combination of a reinforcing strip extending lengthwise of said member on the outside thereof the greater part of the length of said member, said strip being tensioned to press its opposite lengthwise marginal portions against the face of the sash member, and means for clamping the strip to said member, said clamping means extending entirely through the rail.

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